

PATENT  
09/888,309  
Docket 090/002

CLAIM AMENDMENTS

1 to 22. *Cancelled*

23. *(Withdrawn)* A method for producing a neural cell population from human embryonic stem (hES) cells, comprising culturing progeny of the hES cells in a medium containing one or more added TGF- $\beta$  Superfamily Antagonists so as to produce a population in which at least 50% of the cells express either polysialylated NCAM or  $\beta$ -tubulin III.
24. *(Withdrawn)* The method of claim 23, wherein the progeny are cultured in a medium containing noggin.
25. *(Withdrawn)* The method of claim 23, wherein the progeny are cultured in a medium containing follistatin.
26. *(Withdrawn)* The method of claim 23, wherein the medium further contains a neurotrophin.
27. *(Withdrawn)* The method of claim 26, wherein the neurotrophin is NT-3 or BDNF.
28. *(Withdrawn)* The method of claim 23, wherein the medium further contains a combination of factors selected from differentiation factors, neurotrophic factors, and survival factors.
29. *(Withdrawn)* The method of claim 23, comprising differentiating the hES cells by plating them onto a solid surface without forming embryoid bodies or cell aggregates.
30. *(Withdrawn)* The method of claim 29, wherein the solid surface comprises fibronectin or a polycation.
31. *(Withdrawn)* The method of claim 23, wherein at least 10% of the MAP-2 positive cells in the produced population express tyrosine hydroxylase.
32. *(Withdrawn)* The method of claim 23, further comprising combining the cell population with a compound, determining any phenotypic or metabolic changes in the cell that result from contact with the compound, and correlating the change with cellular toxicity or modulation caused by the compound.

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33. *(Withdrawn)* The method of claim 23, further comprising identifying an mRNA expressed at a different level in the neural cell population, relative to the level in undifferentiated hES cells; and preparing a polynucleotide comprising a nucleotide sequence of at least 30 consecutive nucleotides contained in the identified mRNA.
34. *(Currently amended)* A system for producing differentiated cells from human embryonic stem (hES) cells, comprising:  
a first cell population comprising the undifferentiated hES cells; and  
a second cell population, comprising progeny of the hES cells in a medium containing one or more added TGF- $\beta$  transforming growth factor  $\beta$  (TGF- $\beta$ ) Superfamily Antagonists.
35. *(Currently amended)* A system for producing differentiated cells from human embryonic stem ~~(hES)~~ a line of hES cells, comprising:  
~~a first cell population comprising the~~  
said line of undifferentiated hES cells; and  
a second cell population, comprising at least ~10% hES derived neural cells, identifiable by the criteria that they are progeny of said hES cells and express both MAP-2 microtubule-associated protein 2 (MAP-2) and tyrosine hydroxylase.
36. *(Currently amended)* The system of claim 35, wherein the second population has been produced ~~from cells of the first population (or their progeny) by the method of claim 23~~  
by culturing in a medium containing one or more added TGF- $\beta$  Superfamily Antagonists.
37. *(Currently amended)* The system of claim 36, wherein the ~~progeny of the hES cells are cultured~~  
second cell population has been produced by culturing in a medium containing noggin.
38. *(Currently amended)* The system of claim 36, wherein the ~~progeny of the hES cells are cultured~~  
second cell population has been produced by culturing in a medium containing follistatin.
39. *(Previously presented)* The system of claim 36, wherein the medium further contains a neurotrophin.
40. *(Currently amended)* The system of claim 39, wherein the neurotrophin is ~~NT-3 or BDNF~~  
neurotrophin 3 or brain derived neurotrophic factor.
41. *(Previously presented)* The system of claim 34, wherein the second cell population is in a medium containing noggin.

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42. *(Previously presented)* The system of claim 34, wherein the second cell population is in a medium containing follistatin.
43. *(Previously presented)* The system of claim 34, wherein the medium further contains a neurotrophin.
44. *(Currently amended)* The system of claim 43, wherein the neurotrophin is ~~NT-3 or BDNF~~ neurotrophin 3 or brain derived neurotrophic factor.
45. *(Previously presented)* The system of claim 34, wherein the second cell population has been obtained by a process comprising differentiating the hES cells by plating them onto a solid surface without forming embryoid bodies or cell aggregates.
46. *(Currently amended)* The system of ~~claim 46~~ claim 45, wherein the solid surface comprises fibronectin or a polycation.
47. *(Withdrawn) (Currently amended)* A method for testing a substance for its effect on differentiated cells, comprising combining the second cell population of the system of claim 34 with the compound, determining any phenotypic or metabolic ~~changes~~ change in the second cell population that ~~result~~ results from contact with the substance, and correlating the change with cellular toxicity or modulation caused by the substance.
48. *Cancelled*